Configure a Fabric Extender with Application Centric Infrastructure

Contents

Introduction

This document describes how a Fabric Extender (FEX) can be configured with Application Centric Infrastructure (ACI) and how Host Interfaces (HIF) on a FEX can be configured.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on ACI Software Release 1.1(3f).

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure

1. Attach a FEX to the ACI Fabric

At the time of this writing:

- Straight-through attachment of a FEX to a leaf is supported.
- These FEX models were supported: N2K-C2232PP-10GEN2K-C2232TM-E-10GEN2K-C2348UPQN2K-C2348TQN2K-C2332TQN2K-C2248TP-E-1GEN2K-C2248TP-1GEN2K-C2248PQ-10GEN2K-B22IBM-PN2K-B22DELL-P

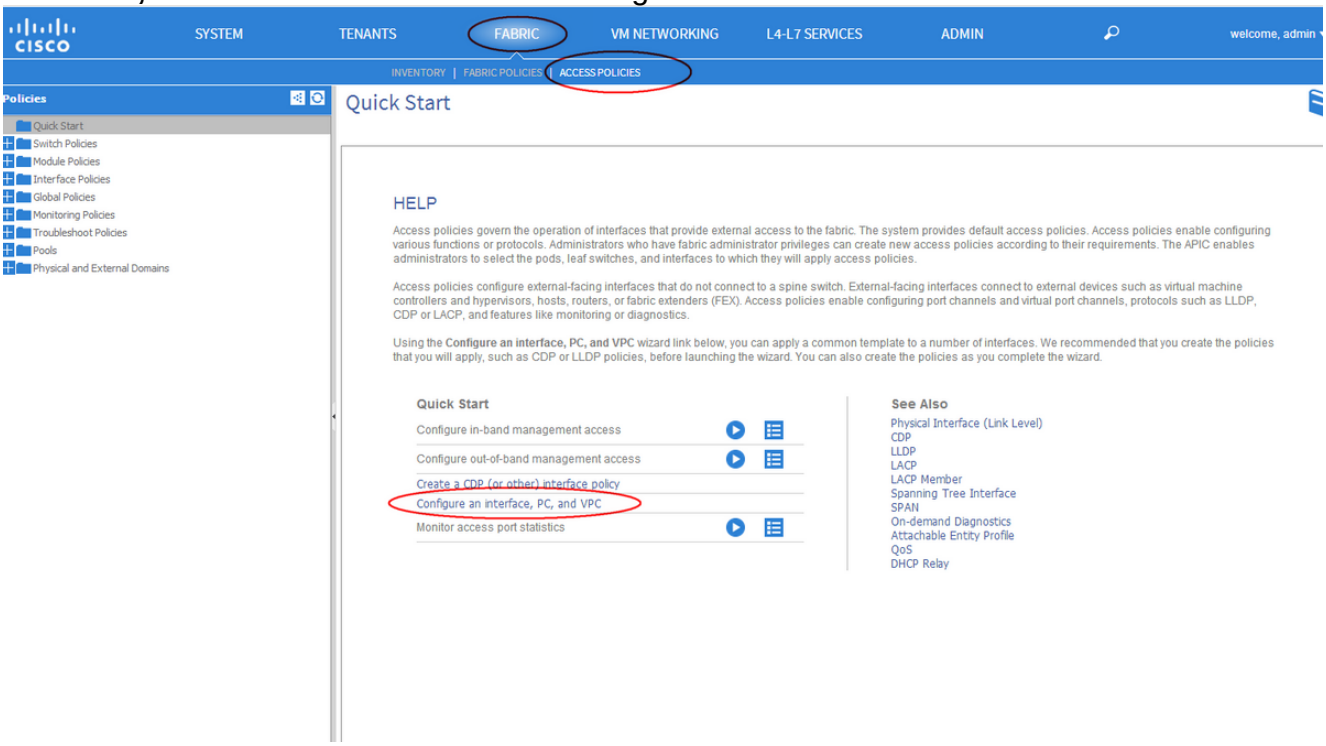
However, because this list might be frequently updated, refer to Nexus 9000 Switch Release Notes for your ACI software for an accurate and updated list.

A FEX in ACI can only be attached to a single leaf with one or more ports. The ports that connect FEX to leaves will be part of a port-channel.

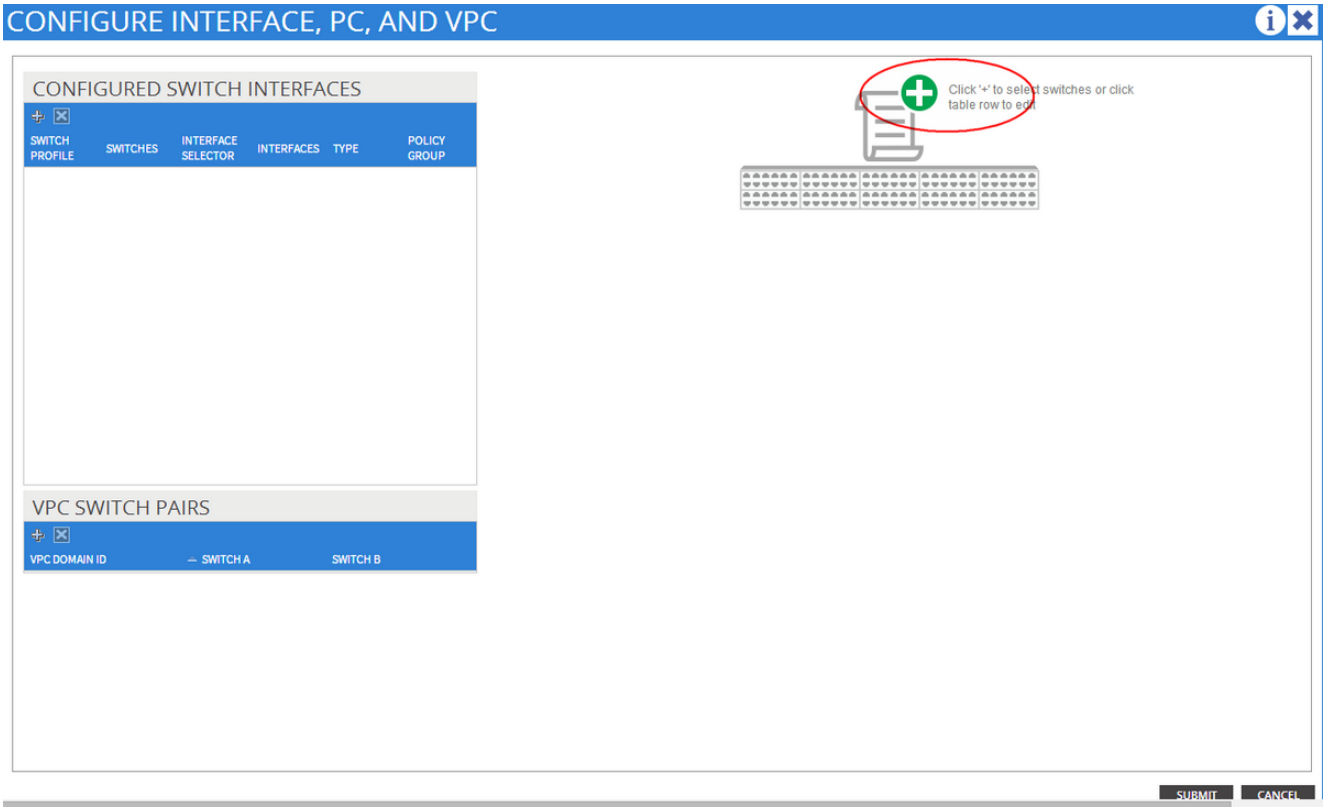
In this example, a FEX has been attached to ACI Leaf 1 on port 1/17-18.

Configure with the GUI

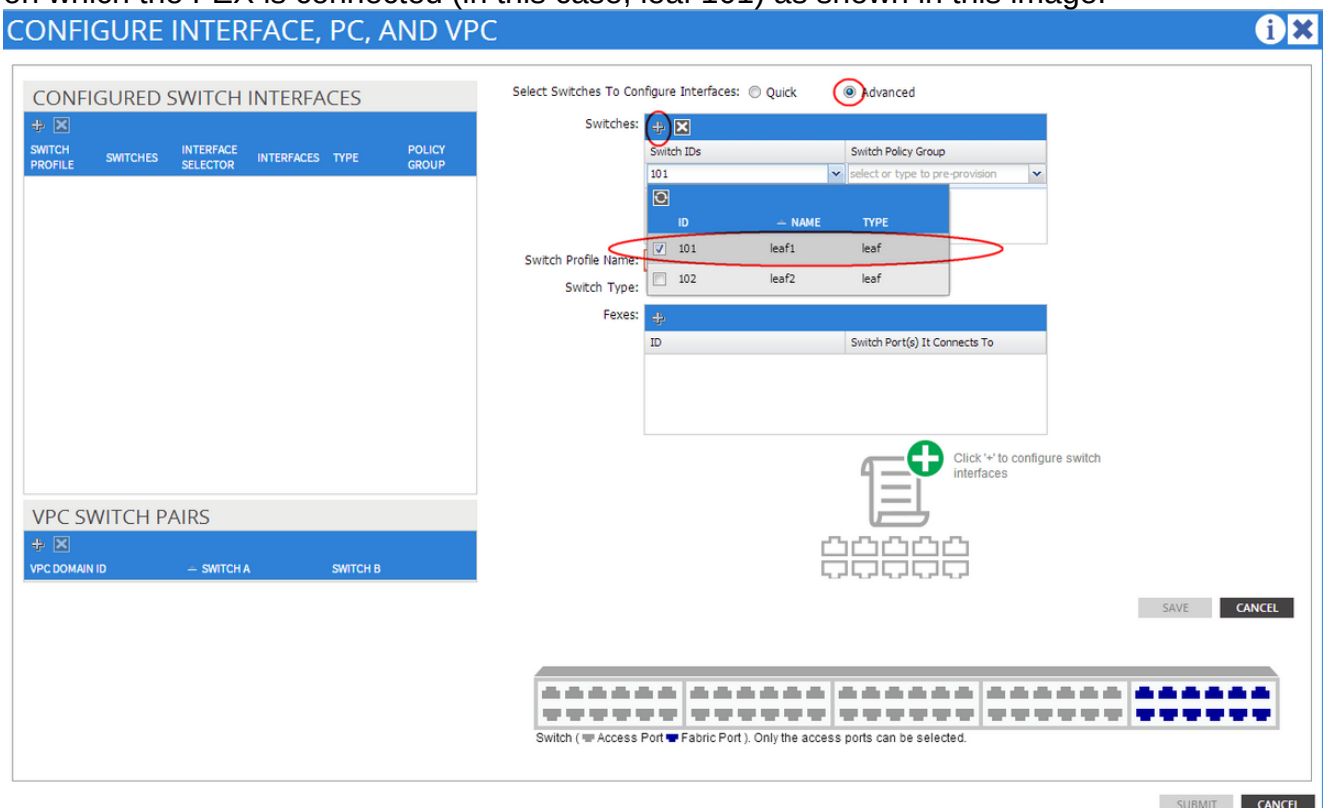
1. On the top menu bar, click **Fabric** and then click **Access Policies**.
2. **Select Quick Start** in the left navigation pane and then click the link **Configure an interface, PC and VPC** as shown in the image.



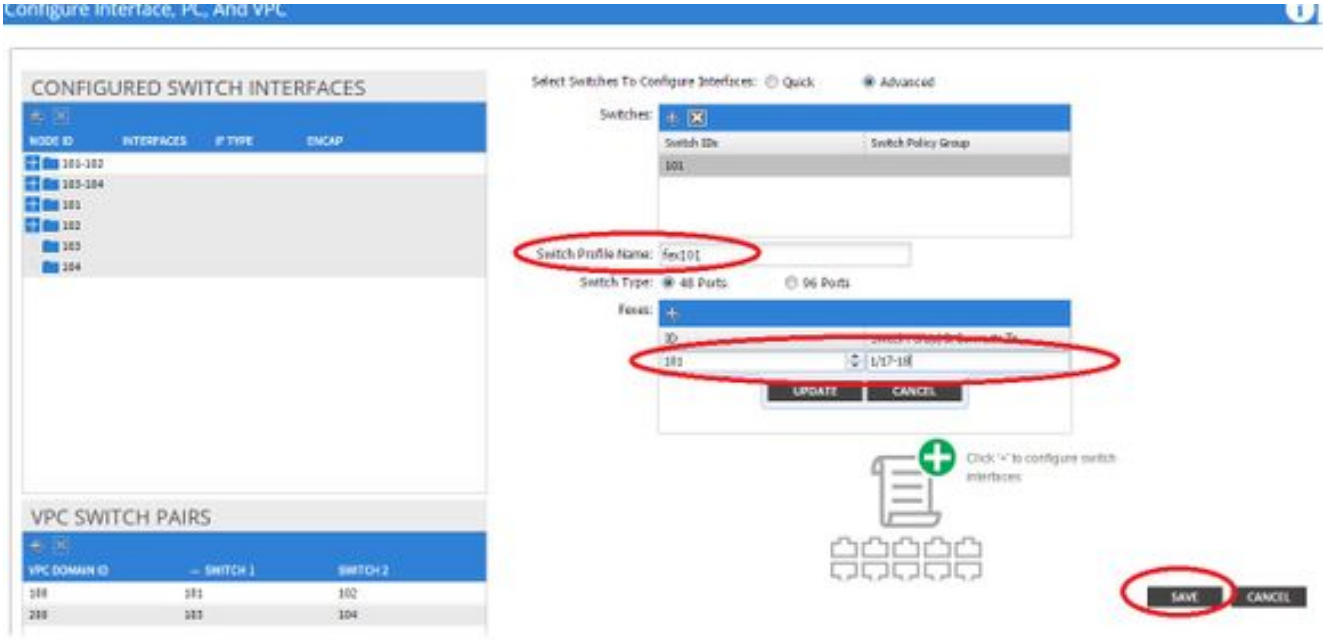
3. Click the green **+** icon as shown in this image.



4. Click the **Advanced** button, and in the Switches section click the small **+** and select the leaf on which the FEX is connected (in this case, leaf 101) as shown in this image.



5. Complete these steps: In the Switch Profile Name field, enter the name for the FEX profile (in this case, fex101).In the FEX section, enter the FEX ID (this will be the FEX number) and the list of ports on the leaf that connect to that FEX (1/17-18).Click **Update.**
6. Click **Save**.
7. Click **Submit**.

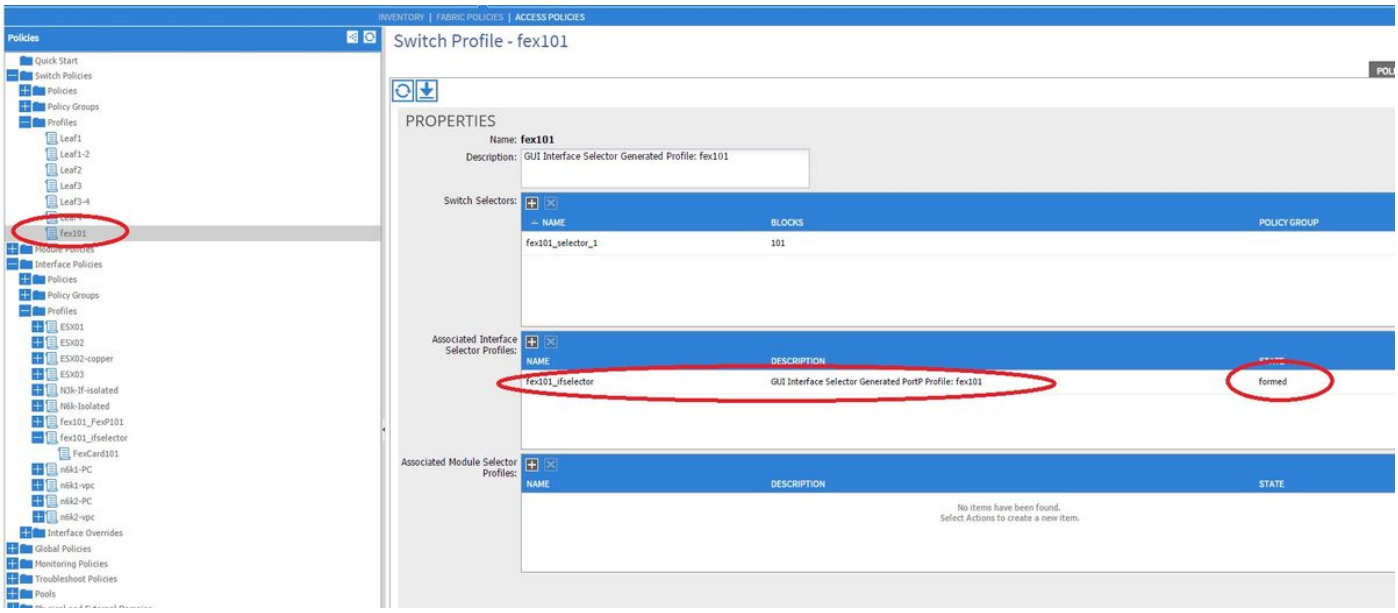


8. Your FEX is now attached to the Fabric.

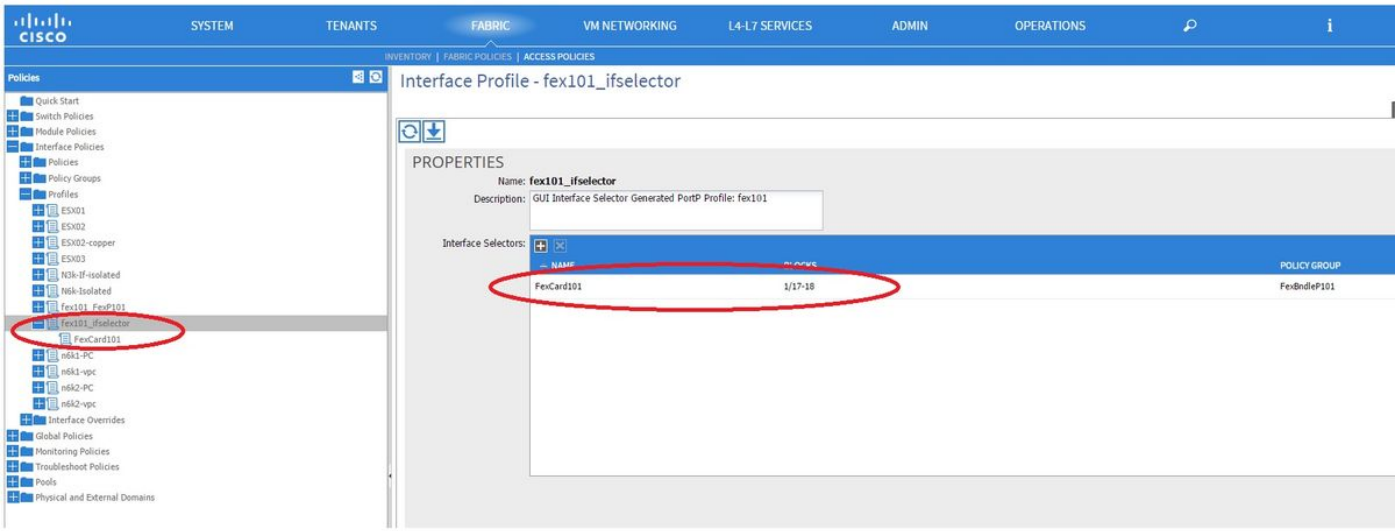
Check the FEX with the GUI

1. In the top menu bar, click **Fabric** and then click **Access Policies**.

2. In the left Navigation Pane, you will see **Switch Policies > Profiles**, the name of the FEX you used in Step 3., and an Associated Interface Profile with the same name and the **if_selector** string appended.



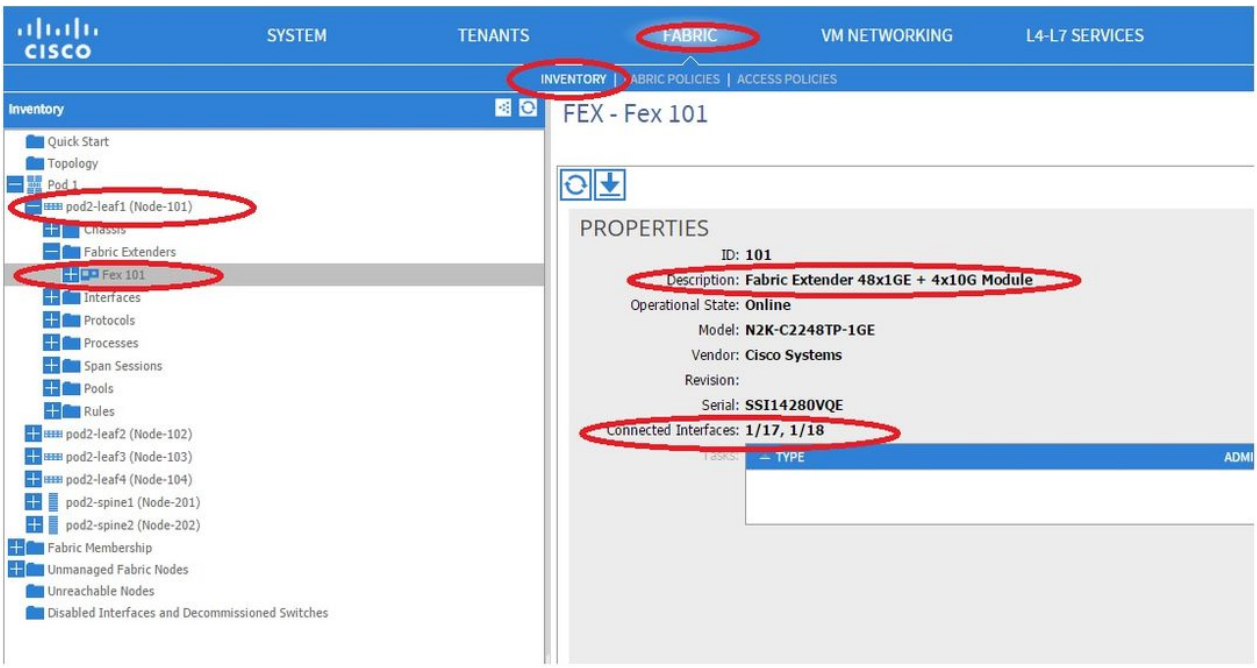
3. In **Interface Policies > Profiles**, you will see the automatically generated interface policy name: **name_ifselector**. This contains the FEX attachment information in the work pane, that includes the port used on the Leaf to connect to the FEX (in the example port 17-18).



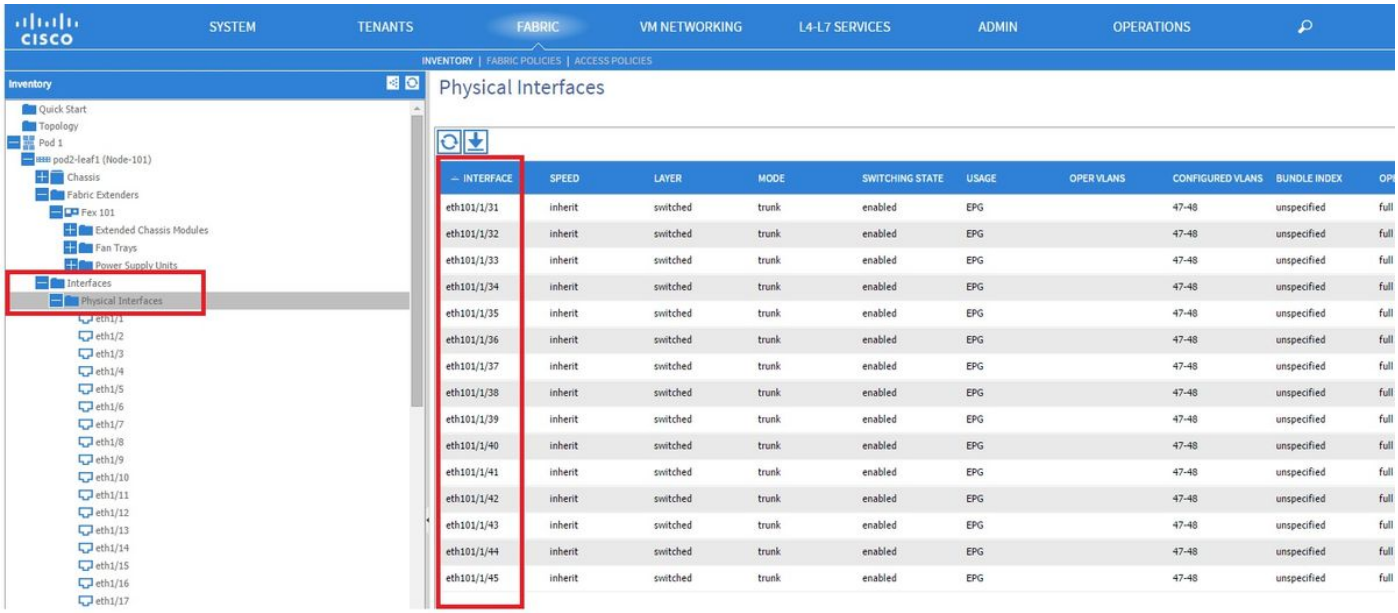
4. In the top menu bar, click **Fabric** and then click **Inventory**.

5. In the left Navigation Pane, navigate to **Pod 1 > Fabric Extender**. You will see your FEX and the FEX detail appear in the work pane.

This might take a moment between the time you configure it and the time it is visible in the inventory (around 1 minute). If it is the first time you attach or configure this FEX to the Fabric or if the ACI Fabric was just upgraded, it is likely that ACI will download new software to upgrade the FEX. In case of such a scenario, it takes much longer for the FEX to be visible (expect more than 10 minutes). In this scenario, if you Secure Shell (SSH) to the leaf and click on **show fex detail,** you see that a software download occurs.



While still in **Fabric > Inventory**, **Expand Pod 1 > Leaf1 > Interfaces**, you will see the list of interfaces on Leaf1 and that should list the host interfaces of the FEX numbered by the **fex_id/1/x**. The FEX ID is the ID number you chose in Step 5. and x is the HIF on the FEX.



Note: The complete interface numbering for a FEX host port from the Fabric point of view includes the Node ID. Hence, a Host Interface Z on FEX Y on Leaf X will be numbered X/Y/1/Z. For example, port 1 on FEX 101 on leaf 101 will be 101/101/1/1.

Verify on the Switch CLI

SSH to the switch (pod2-leaf1) and verify with these commands:

- **show fex**
- **show fex detail**

It might be possible that the ACI leaf needs to download a new image to the FEX. If that is the case, you will see:

```
pod2-leaf1# show fex
  FEX          FEX           FEX                         FEX
Number     Description      State            Model              Serial

101        FEX0101          Image Download   N2K-C2248TP-1GE    SSI14280VQE
```

When the FEX is completely discovered, you will see:

```
pod2-leaf1# show fex
  FEX          FEX           FEX                         FEX
Number     Description      State            Model              Serial

101        FEX0101          Online           N2K-C2248TP-1GE    SSI14280VQE

pod2-leaf1# show fex  detail
FEX: 101  Description: FEX0101   state: Online
  FEX version: 11.1(3f) [Switch version: 11.1(3f)]
  FEX Interim version: 11.1(3f)
  Switch Interim version: 11.1(3f)
  Extender Model: N2K-C2248TP-1GE,  Extender Serial: SSI14280VQE
  Part No: 68-3601-05
  Card Id: 99, Mac Addr: c4:71:fe:42:d7, Num Macs: 64
```

```
  Module Sw Gen: 22  [Switch Sw Gen: 21]
 pinning-mode: static    Max-links: 1
  Fabric port for control traffic: Eth1/17
  Fabric interface state:
    Eth1/17 - Interface Up. State: Active
    Eth1/18 - Interface Up. State: Active
    Po7 - Interface Up. State: Active
  Fex Port        State  Fabric Port
       Eth101/1/1    Up         Po7
       Eth101/1/2  Down         Po7
       Eth101/1/3  Down         Po7
       Eth101/1/4  Down         Po7
       Eth101/1/5  Down         Po7
       Eth101/1/6  Down         Po7
       Eth101/1/7  Down         Po7
       Eth101/1/8  Down         Po7
       Eth101/1/9  Down         Po7
      Eth101/1/10    Up         Po7
      Eth101/1/11  Down         Po7
      Eth101/1/12  Down         Po7
      Eth101/1/13  Down         Po7
      Eth101/1/14  Down         Po7
      Eth101/1/15  Down         Po7
      Eth101/1/16  Down         Po7
      Eth101/1/17  Down         Po7
      Eth101/1/18  Down         Po7
      Eth101/1/19  Down         Po7
      Eth101/1/20  Down         Po7
      Eth101/1/21  Down         Po7
      Eth101/1/22  Down         Po7
      Eth101/1/23  Down         Po7
      Eth101/1/24  Down         Po7
      Eth101/1/25  Down         Po7
      Eth101/1/26  Down         Po7
      Eth101/1/27  Down         Po7
      Eth101/1/28  Down         Po7
      Eth101/1/29  Down         Po7
      Eth101/1/30  Down         Po7
      Eth101/1/31  Down         Po7
      Eth101/1/32  Down         Po7
      Eth101/1/33  Down         Po7
      Eth101/1/34  Down         Po7
      Eth101/1/35  Down         Po7
      Eth101/1/36  Down         Po7
      Eth101/1/37  Down         Po7
      Eth101/1/38  Down         Po7
      Eth101/1/39  Down         Po7
      Eth101/1/40  Down         Po7
      Eth101/1/41  Down         Po7
      Eth101/1/42  Down         Po7
      Eth101/1/43  Down         Po7
      Eth101/1/44  Down         Po7
      Eth101/1/45  Down         Po7
      Eth101/1/46  Down         Po7
      Eth101/1/47  Down         Po7
      Eth101/1/48  Down         Po7
```

Attach a FEX to a Leaf with REST API

This XML code posted to **x.x.x.x/api/mo/uni.xml** adds FEX101 to Leaf 1 (sw 101) on port 1/17-18:

```
pod2-leaf1# show fex
  FEX         FEX           FEX                         FEX
Number    Description      State            Model              Serial

101       FEX0101          Online           N2K-C2248TP-1GE    SSI14280VQE

pod2-leaf1# show fex  detail
FEX: 101  Description: FEX0101   state: Online
  FEX version: 11.1(3f) [Switch version: 11.1(3f)]
  FEX Interim version: 11.1(3f)
  Switch Interim version: 11.1(3f)
  Extender Model: N2K-C2248TP-1GE,  Extender Serial: SSI14280VQE
  Part No: 68-3601-05
  Card Id: 99, Mac Addr: c4:71:fe:42:d7, Num Macs: 64
  Module Sw Gen: 22  [Switch Sw Gen: 21]
 pinning-mode: static    Max-links: 1
  Fabric port for control traffic: Eth1/17
  Fabric interface state:
    Eth1/17 - Interface Up. State: Active
    Eth1/18 - Interface Up. State: Active
    Po7 - Interface Up. State: Active
  Fex Port        State  Fabric Port
       Eth101/1/1    Up         Po7
       Eth101/1/2  Down         Po7
       Eth101/1/3  Down         Po7
       Eth101/1/4  Down         Po7
       Eth101/1/5  Down         Po7
       Eth101/1/6  Down         Po7
       Eth101/1/7  Down         Po7
       Eth101/1/8  Down         Po7
       Eth101/1/9  Down         Po7
      Eth101/1/10    Up         Po7
      Eth101/1/11  Down         Po7
      Eth101/1/12  Down         Po7
      Eth101/1/13  Down         Po7
      Eth101/1/14  Down         Po7
      Eth101/1/15  Down         Po7
      Eth101/1/16  Down         Po7
      Eth101/1/17  Down         Po7
      Eth101/1/18  Down         Po7
      Eth101/1/19  Down         Po7
      Eth101/1/20  Down         Po7
      Eth101/1/21  Down         Po7
      Eth101/1/22  Down         Po7
      Eth101/1/23  Down         Po7
      Eth101/1/24  Down         Po7
      Eth101/1/25  Down         Po7
      Eth101/1/26  Down         Po7
      Eth101/1/27  Down         Po7
      Eth101/1/28  Down         Po7
      Eth101/1/29  Down         Po7
      Eth101/1/30  Down         Po7
      Eth101/1/31  Down         Po7
      Eth101/1/32  Down         Po7
      Eth101/1/33  Down         Po7
      Eth101/1/34  Down         Po7
      Eth101/1/35  Down         Po7
      Eth101/1/36  Down         Po7
      Eth101/1/37  Down         Po7
      Eth101/1/38  Down         Po7
      Eth101/1/39  Down         Po7
      Eth101/1/40  Down         Po7
```

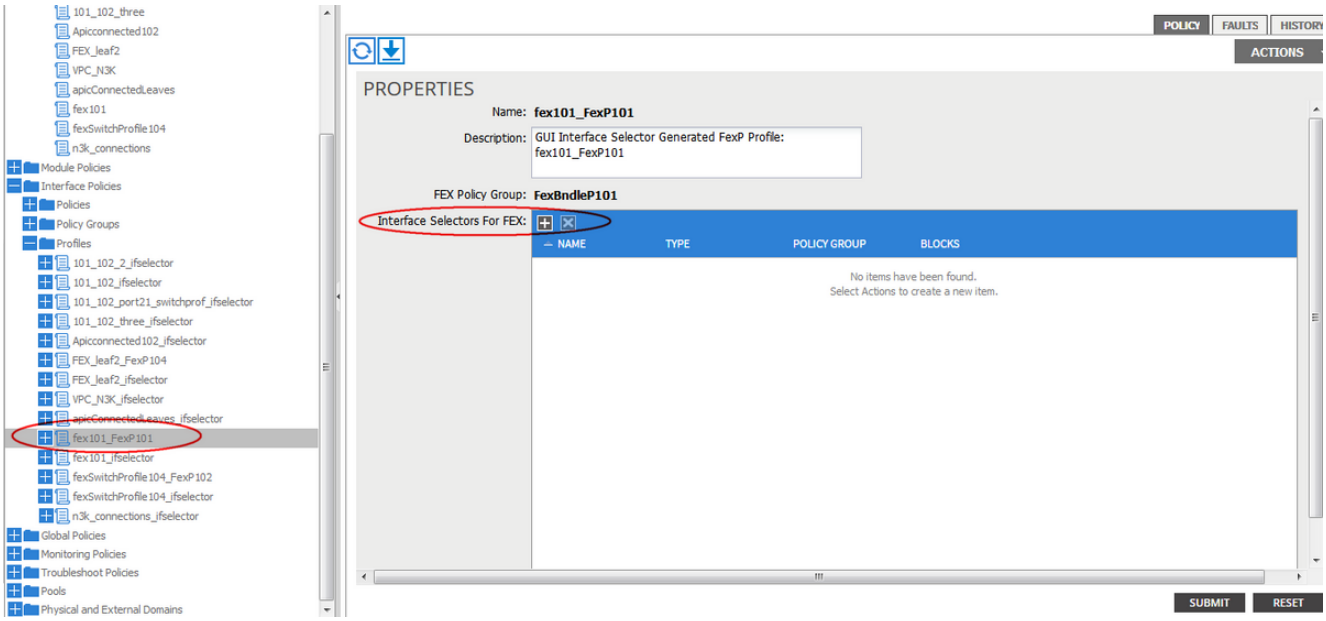
```
Eth101/1/41   Down          Po7
Eth101/1/42   Down          Po7
Eth101/1/43   Down          Po7
Eth101/1/44   Down          Po7
Eth101/1/45   Down          Po7
Eth101/1/46   Down          Po7
Eth101/1/47   Down          Po7
Eth101/1/48   Down          Po7
```

2. Configure FEX HIF

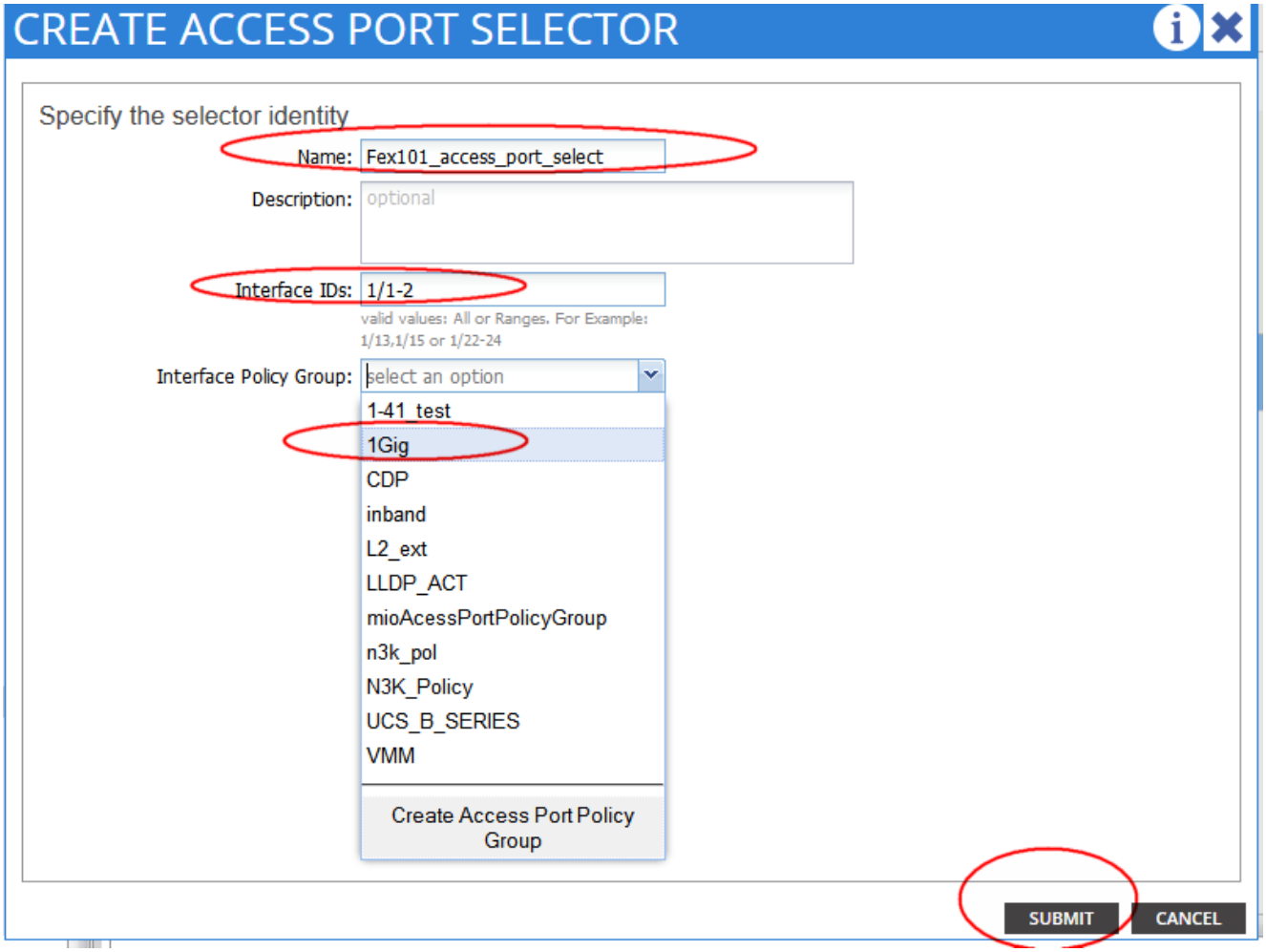
At this stage, the FEX HIFs are visible by the ACI Leaf, however when you configure physical properties of FEX HIF, they are still not done yet.

In this example, set the interface 1 and 2 of FEX 101 to 1 Gigabit Ethernet speed.

1. Select **Fabric > Access Policy**. In the Navigation pane, navigate to **Interface Policies > Profiles** and select **fex101_FexP101**. (This was created automatically when FEX was attached to the Leaf as explained previously in this document. This object is named as FEX appended with FexP<fexId>). In the work pane, click the **+** button in front of the Interface selector for FEX:

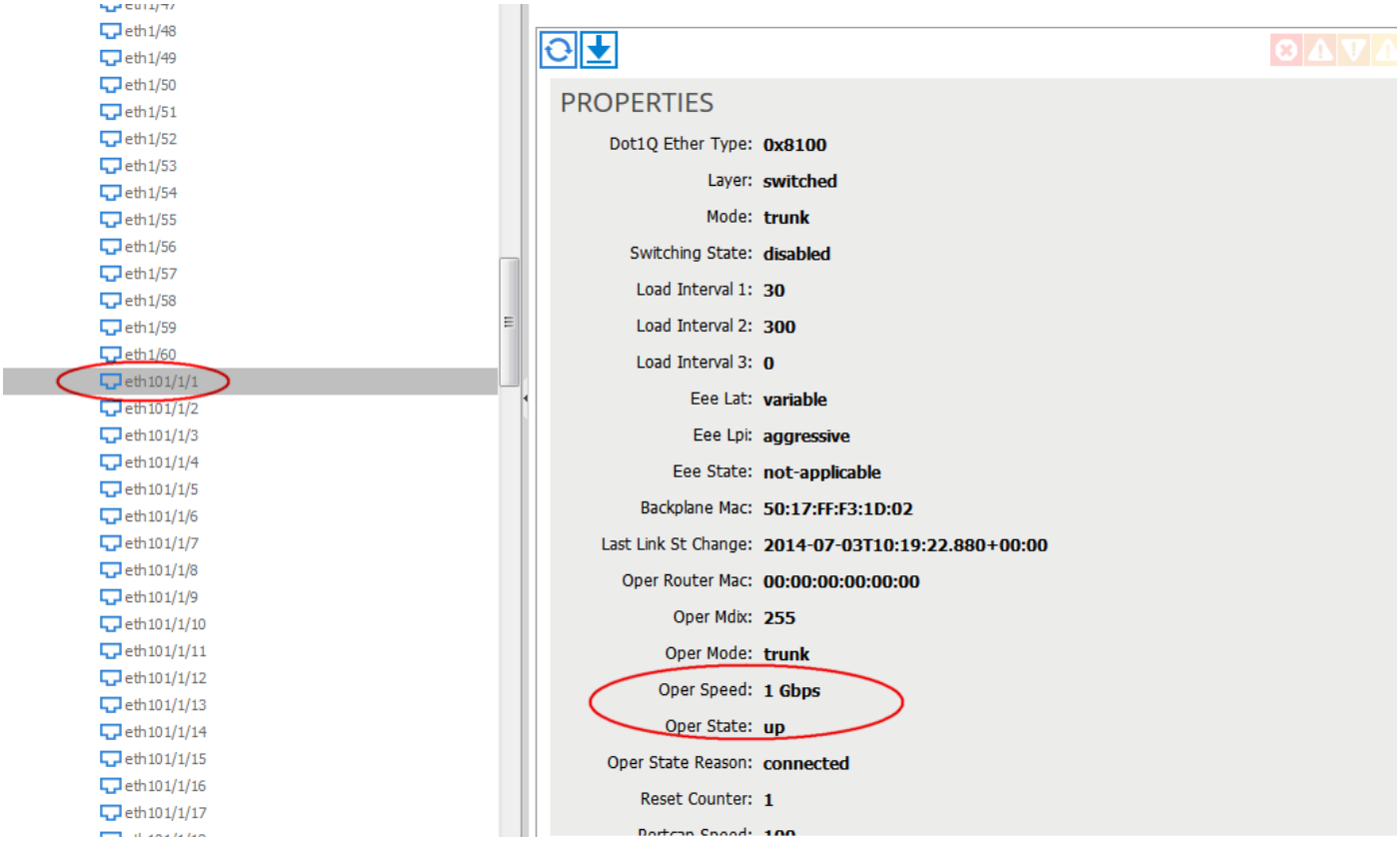


2. In the **Create Access Port Selector** window: **Note**: In this step, select and configure the Host port. So, the interface ID chosen here is HIF on FEX 101 and not any physical Leaf ports.a. In the Name field, enter a name for the group of port to configure, here: **Fex101_access_port_select**.
   b. In the Interface IDs field, enter the interface IDs you want to configure, here: 1/1-2.
   c. From the Interface Policy Group drop-down list, select the policy for 1 Gigabit Ethernet interface speed (named **1Gig**) configured earlier. You might want to create a new policy for this group of ports.
   d. Click **Submit**.



Verify with the GUI

In the Fabric Inventory, navigate to **Pod 1 > LeafX (leaf where fex is attached) > Interfaces.** Choose the FEX HIF as shown in this image.



Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.